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ABSTRACT

This paper briefly reviews the early efforts at forming alumni associations and organizing alumni reunions, describes a number of the more recent alumni surveys used in assessment activities, and concludes with suggestions for conducting such surveys. First, pre-1980 alumni surveys that attempted to measure college outcomes are discussed. Next, a list of the goals and measures of institutional effectiveness (from a 1980-1989 literature review) is provided. Assessment efforts are examined that attempted to measure school effectiveness through evaluation of alumni careers, as well as efforts to measure the satisfaction alumni felt concerning their liberal arts education. Next, a discussion of comprehensive alumni studies from the State University of New York, Albany; Tufts University (Massachusetts); and Georgetown University (District of Columbia) are provided, as well as a comparative analysis of the rankings given from each survey of the three most important abilities and skills common to all three surveys and that of the Consortium on Financing Higher Education. The use of standardized alumni surveys from the American College Testing Service, the National Center for Higher Education Management Systems, and the College Board are also discussed. The paper concludes with methodological considerations and suggestions for conducting an alumni survey to assess educational outcomes. Contains 38 references and a 57-item bibliography. (GLR)

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Listening to Your Alumni: One Way to Assess Academic Outcomes

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Colleges in the United States have long tried to keep in touch with their alumni. Early efforts were directed at forming alumni associations and organizing alumni reunions. It was the economic trauma and uncertainties of the 1930s depression that prompted systematic assessments of college outcomes. The first forty-plus years of these assessments have been wonderfully summarized by C. Robert Pace in his book, *Measuring the Outcomes of College* (1979). This paper briefly reviews these early efforts, describes a number of the more recent alumni surveys used in assessment activities, and concludes with suggestions for conducting such surveys.

Alumni Surveys Conducted Prior to the 1980s

The first attempts to measure college outcomes focused on the types of jobs secured by college graduates and how successful these graduates were in finding jobs and staying employed. The first such study cited by Pace (p.48) was a book written by John Tunis in 1936, entitled *Was College Worthwhile?* Written by Tunis for the 25th reunion of his Harvard Class of 1911, the book covered a wide range of topics, e.g., jobs, family, and civic activities. What it lacked in hard data, it made up for in readability. More statistically sophisticated efforts to examine some of the economic benefits of college were conducted during the 1930s by Purdue University (p.51), the University of Minnesota (p.51), and the United States Office of Education (p.54).

The ultimate test of respondent patience was pulled off successfully by Pace himself in the late 1930s, when he surveyed a random sample of 1,381 students who had entered the University of Minnesota during two years in the 1920s (p.56). Almost 70% completed the 52-page questionnaire! Since about half of those entering the University in those years received a degree, Pace was able to compare both groups. Four general topics were covered: (1) earning a living, (2) home/family life, (3) socio-civic affairs, and (4) personal life.

During the 1940s, two major alumni surveys were conducted. In 1947, *Time* magazine surveyed a sample of 17,000 graduates of over 1,000 of the 1,200 degree-granting institutions in the country at that time (Pace, p.58). Besides employment and satisfaction with college and their academic major, the survey probed the graduates' attitudes on a variety of civic affairs.

Another alumni survey conducted in 1947 involved a sample of Syracuse alumni from seven classes going back to 1907 (p.63). This survey added several important features not included in earlier ones. The first was a series of education goals or learning objectives. The answers were cross-tabulated with undergraduate majors of the respondents. Alumni were also asked their opinions on a variety of topics where the opinions of faculty experts were already known. Responses were compared to those of the experts and were cross-tabulated by academic majors. Finally, various activities of the alumni were cross-tabulated with the academic majors.

Pace did not report any significant alumni surveys conducted during the 1950s. In the sixties, however, three were cited. The first (p.76) was by Robert Calvert, Jr. of the University of California, Berkeley. One hundred colleges and universities, both public and private, took part in this survey directed to liberal arts graduates who were five, ten, or fifteen years out of college. Almost

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11,000 responses were received, for a response rate of 70% of alumni with valid/usable addresses. Of particular interest to Calvert was the relationship of the alumni's liberal arts education to their subsequent occupations. When did alumni choose a career field (before, during, or after college)? How satisfied were they with their jobs? What values did the alumni attribute to their liberal education? The survey also measured involvement in cultural, civic, religious, and political activities, in addition to activities related to their alma mater.

Many of these same topics were contained in a 1969 survey (Pace, p.80) by the National Opinion Research Center (NORC). This survey was limited to a sample of 1961 graduates from 135 colleges and universities. Besides examining the share of the graduates who attained an advanced degree (about a third), the authors (Spaeth and Greeley, 1970) probed the alumni's feelings about their alma mater and their reactions to various aspects of their college education. One of the more interesting aspects of the NORC survey was a series of indexes, such as "interest in the arts" and "serious reading," calculated for alumni in different careers based on current activities reported.

In 1969, Pace himself conducted a survey of alumni from the class of 1950 from seventy-four colleges and universities (see Pace, 1972, and Pace, 1974). More than 8,000 responses to an 18-page questionnaire were secured, for a response rate of 58%. The design of the questionnaire was similar to that used at Syracuse in 1947 (Pace, 1979, p.63). This design was based on the work of Louis Guttman at the Pentagon during World War II. Guttman scales involved a series of related activities, arranged in ascending order of complexity or commitment, designed to reveal the level of involvement of individual respondents. From answers to related activities questions, a single score was calculated to determine the extent of an individual respondent's involvement.

Using the Guttman approach, Pace sought to assess the outcomes of college using the activities, values, and opinions of alumni. Whereas his earlier work at Syracuse looked at responses by academic majors and the Calvert and NORC surveys examined them by different career fields, in this survey Pace studied differences by type of institution attended. What he found were significant differences among respondents from various types of institutions. For instance, alumni of vocationally oriented institutions recognized a higher relationship between their college education and the knowledge needed in their careers than did liberal arts graduates. On the other hand, liberal arts graduates were more actively involved in humanities-type activities, e.g., arts and literature, than were those from career-related programs.

One of the more interesting questions asked by Pace measured the alumni's general attitude toward their alma mater, e.g., What is your present feeling about your college? Responses included: "strong attachment to it," 30%; "pleasantly nostalgic but no strong feeling," 50%; "more or less neutral," 16%; "generally negative," 3%; and "thoroughly negative," 1%.

In the 1970s, two major studies were reported by Pace (1979, pp.91-95). Both related college outcomes to employment. The first was a study undertaken by the Higher Education Research Institute (Solmon, Bisconti and Ochsner, 1977). It was focused on a subsample of individuals who graduated from one of 248 institutions in 1961 and who did not continue for an advanced degree. Respondents numbered 5,500, for a response rate of 72%. Responses were analyzed by type and level of employment, income, job satisfaction, the usefulness of skills and knowledge gained in college to jobs, and the frequency with which the content of courses in academic majors was used in careers. One of the most notable findings was that for the quarter of the respondents who said that their current job was not related to their academic major, only 6% were dissatisfied with their jobs.

In 1976, eleven liberal arts colleges, members of the Associated Colleges of the Midwest, surveyed graduates of the classes of 1960, 1965, 1970, and 1975 (Wishart and Rossmann, 1977). Over 3,300 responses were obtained, with a response rate of 61% from the one-year graduates and 51% for the older alumni. In spite of the bleak employment picture in the country at the time, only 4% of the men and 5% of the women from the class of 1975 were unemployed and seeking employment six to nine months after graduation. The most notable innovative aspect of this survey was the requested response to a list of abilities and skills associated with a liberal arts degree. Respondents were asked to indicate the extent to which these skills and abilities were enhanced during undergraduate years, and their relative importance subsequently. This approach has been adopted in a number of the more recent surveys.

Alumni Survey Literature from 1980 to 1989

The bibliography of this report highlights the fact that alumni surveys are now widely used by colleges and universities. The American Council on Education *Campus Trends, 1989* (El-Khawas, 1989) estimated that student learning is being assessed with the use of "long-term outcomes of graduates" by a quarter of all colleges and universities and that such assessment is being planned at an additional 44% of campuses. Differences by type of institution are listed below:

Table 1
Planned or In-Place Assessment of the Long-term Outcomes of Graduates

	Public 2-Year	Public 4-Year	Independent (all)
Assessment in place	26%	22%	26%
Assessment planned	39%	46%	46%

Before we examine types and selected results of some of these assessment efforts, it might be helpful to establish a framework for them. Leonard Romney (1978), in his attempt to identify measures of "institutional goal achievement," surveyed 133 trustees, 417 administrators, and 600 faculty members at 45 colleges and universities to determine the appropriateness of institutional goal areas and measures of achievement. In eight of twenty goal areas, alumni surveys were identified as appropriate

measurement instruments. Romney (p.31) identified the following goal areas and measures of progress that involved alumni or former students:

Goal Area	Measures of Progress
Academic Development	Satisfaction of currently enrolled students or recent graduates with their academic development
	Student and/or former student performance on licensing and certification examinations
Intellectual Orientation	Student and/or former student perceptions and evaluations of their interest in continued self-initiated study and inquiry
	Student and/or former student ability to formulate and analyze problems
Individual Personal Development	Student and/or former student perceptions and evaluations of personal development opportunities offered at the institutions
Humanism/ Altruism	Students and/or former students expressing concern for human welfare and well-being
Traditional Religiousness	Student and/or former student evaluations of the effect of their institutional experience on traditional religious values
Social Criticism/ Activism	Utilization by students and/or former students of mechanisms (e.g., voting, petitions) of the political process
	Participation in social, charitable, political, or civic organizations by faculty, students, and/or former students

For the following goal areas, no alumni or former students' opinions or activities were listed as appropriate measures of institutional effectiveness: Cultural/Aesthetic Awareness, Advanced Training, Research, Meeting Local Needs, Public Service, Social Egalitarianism, Academic Freedom, Democratic Governance, Community, Intellectual/Aesthetic Environment, Innovative Climate, Off-Campus Learning, and Accountability/Efficiency.

If this paper's bibliography can be used as a guide, most alumni surveys aim at assessing the vocational preparation goal identified by Romney. Over thirty of the articles focus on program review of academic majors. A second category of articles is concerned with alumni satisfaction with, and perceived utility of, humanities programs. A third kind of follow-up might be classified "comprehensive," since a wide variety of outcomes are measured, including alumni careers, further education, citizenship activities, evaluation of educational programs and services, and the effects of educational debt. Since space and time do not permit a review of all of the studies, the remainder of the literature review portion of this paper will discuss a few examples of each type. It will also take a look at three standardized alumni survey instruments available. The final section of the paper will explore some of the methodology issues involved in conducting an alumni survey.

Program Review of Academic Majors

Evaluations of teacher education programs account for twenty of the alumni survey articles. Typical in methodology, but longer-term than most, are the efforts reported by Fred L. Pigge of Bowling Green State University (1978, 1983, 1984, 1987). His articles review efforts to assess the outcomes of teacher training at Bowling Green from 1970 to 1985. For five years after graduation, teachers were asked to relate their experiences in the classroom to the education they received. They evaluated their education in light of on-the-job realities experienced. Besides soliciting the views and suggestions of teachers themselves, Pigge surveyed the principals of the schools where the teachers were assigned.

Glen Schneider and his colleagues (1987) reported a similar follow-up assessment of high-school vocational education programs in Massachusetts. Over 1,200 graduates were contacted by telephone and asked about their employment status, wage rates, and their evaluation of training received. Supervisors were sent a survey and asked to comment on the graduates' performance. Results of the surveys revealed more satisfaction with technical training than with academic components. The survey also revealed discrepancies in male-female wage rates and in perceptions of work habits between some graduates and their supervisors.

Both of these assessment efforts were directly related to alumni careers and grew out of efforts to measure the effectiveness of "majors." Another interesting project was recently undertaken in the California State University System. It is an attempt by J. Daniel McMillin and his colleagues (McMillin, Armstrong, Allen, and Nyberg, 1989) to assess outcomes of five behavioral science programs, (anthropology, economics, political science, psychology, and sociology) on nine campuses. Besides surveying alumni from the late 1960s to the present, the project canvassed current students and faculty. In addition to gathering significant demographic data, alumni were asked to rate several aspects of their major, e.g. accessibility of faculty, helpfulness of the advisor, quality of courses, preparation for employment. For these aspects, and the question, How often did the faculty in your major challenge you to do the very best you could do?, significant differences among departments and campuses were revealed. Like respondents in projects cited later, alumni of these behavioral science programs indicated that relative to other skills, speaking skills were not strengthened in college.

Alumni Assessment of Liberal Arts Programs

One of the objectives of the Associated Colleges of the Midwest (ACM) study cited earlier (Wishart and Rossmann, 1979) was to determine the satisfaction of liberal arts graduates with their education. Reports on this survey, and a similar one conducted in 1984 at the University of Virginia (Bender and Hitchcock, 1986), focused on how satisfied liberal arts graduates were with their education, but not on how their level of satisfaction compared with that of other graduates. Eighty-five percent of ACM graduates were satisfied with their college, and 91% of Virginia alumni would recommend a liberal arts degree to undergraduates wishing to enter their career field. One use of the data was to provide copy for marketing documents for the institutions.

More comprehensive assessments of early career patterns of humanities graduates were conducted in the early 1980s (Sharp and Weidman, 1986; Bechtel, 1984). Sharp and Weidman examined data from the National Center for Education Statistics follow-up of 22,000 1972 high-school seniors. By 1979, about 2,800 had graduated from college. The major fields of these graduates were categorized by the authors as follows: Humanities = 576, Social Sciences = 557, Liberal Arts and Sciences = 272, Education = 758, and Business = 636. The study described the types of jobs held by graduates with different majors and their satisfaction with work. The Sharp/Weidman analysis indicated "no significant differences" between the job satisfaction of humanities graduates and those from other fields. It did, however, find less satisfaction with pay by women humanists than by women from other fields.

Contrary to the Sharp/Weidman study, David Bechtel of the University of Illinois found that humanities graduates were less satisfied with their jobs than other graduates. In his study of Illinois graduates, Bechtel found a wider discrepancy in job satisfaction between humanities and other graduates after one year (69% vs. 86%) than after five years (86% vs. 93%). Besides analyzing job satisfaction from a variety of perspectives, he examined post-graduate activities, including education; employment patterns; how and when first jobs were obtained; and attitudes of graduates toward their undergraduate majors. His study included responses from over 3,100 humanities graduates and over 31,000 other alumni from the classes of 1970 to 1981.

Comprehensive Alumni Surveys

Probably the most comprehensive alumni database in the nation exists at Smith College, where extensive information is maintained on almost nineteen thousand (62%) of all Smith alumnae. Further education, career patterns, comparative salary patterns, and alumnae affiliation with their alma mater have been studied over time (Coughlin and Willemse, 1988). One of the more interesting items uncovered by Mary Ann Coughlin and Crane Willemse in their analysis was that recent alumnae are delaying entry into graduate school.

In his study of State University of New York at Albany (SUNY-Albany) graduates from five fields, (business, chemistry, English, history, and social welfare), J. Fredericks Volkwein (1989) examined occupations entered, incomes and career satisfaction, subsequent education, and the current importance and enhancement while in college of several abilities and skills. This last item was adapted from the ACM study cited earlier, and it was also used in a slightly different form in four other surveys. The most interesting finding of the SUNY-Albany survey is the degree to which its alumni agree with their peers from other schools about which are the most important abilities and skills in their current endeavors. While effective oral communication consistently ranked high on the lists of abilities and skills important to alumni today, it always ranked well down in lists of abilities and skills enhanced in college.

An example of this was a survey of the Harvard/Radcliffe classes of 1957, 1967, and 1977 (Worth, 1989) which revealed that 96% felt that to "communicate well orally" was "greatly" important in current endeavors (the highest percentage accorded to any of the twelve abilities and skills listed), while only 41% indicated that their experience at Harvard/Radcliffe had "great enhanced this skill. Similar results were uncovered at SUNY-Albany; in a survey of twelve selective colleges and universities by the Consortium on Financing Higher Education, (COFHE; Litten, 1989) and at Tufts University (Terkla, 1989) and Georgetown University (Pettit, 1988a, b, and c; 1989).

The following table compares the ranking of the three most important abilities and skills common to all three surveys. ("Listen effectively" ranked third in the SUNY survey, but it was not listed in the others).

Table 2
Alumni Ranking of the Most Important Skills and Abilities

	SUNY	COFHE	Tufts	Georgetown
Function independently	2nd	1st	1st	2nd
Think analytically & logically	4th	2nd	2nd	1st
Communicate well orally	1st	3rd	3rd	3rd

The 1987 COFHE survey (Litten, 1989) broke new ground in that it followed up individual responses to a 1982 senior survey at twelve member schools. One of the objectives of both the senior and alumni surveys was to determine if educational debt inhibited further education. Neither survey provided evidence that it did so. In his report on the survey, Litten noted that the range of alumni from the twelve schools who had enrolled for further degree work went from a high of 81% to a low of 59%. Men were more likely than women to do so, 77% vs. 68%. Besides examining the impact of debt on further education and career patterns, the survey also asked alumni to identify the importance of a variety of considerations in selecting a career. Using factor analysis, four factors were identified, and for two of these, changes were plotted from 1982 to 1987. The first was called a Prosperity Factor (secure future, job availability, high income, and social status). The second was called Social Impact Factor (working for social change, expressing personal values and standards). The basic shift over time was an increased importance in the social impact dimension.

Table 3
Differences between Importance Today and Enhancement While in College

	Georgetown==>	n = 2,640	All Institutions==>	n = 31,432
Skills/ Abilities:	Essential Today	Greatly Enhanced	Essential Today	Greatly Enhanced
Speak . . .	68%	28%	65%	23%
Choose . . .	61%	26%	58%	22%
Plan . . .	54%	23%	54%	21%
Lead . . .	49%	16%	47%	14%

Note: In the table above, the following abbreviations are used: Lead = "lead and supervise tasks and groups of people," Speak = "communicate well orally," Choose = "evaluate and choose between courses of action," Plan = "establish a course of action to accomplish goals."

The COFHE instrument was adapted in 1988 for use by older alumni (Pettit, 1988 and 1989). Twenty-four colleges and universities surveyed selected alumni. Some institutions sent the survey to all alumni from seven three-year clusters from the 1950s to the 1980s, while others limited its use to selected clusters. Besides the consistency with which alumni from different institutions rated the importance of the various abilities and skills listed, the most interesting finding was the similarity in the gaps that existed between "importance today" and "enhanced while undergraduates." The biggest gaps for Georgetown alumni were also reflected in the responses of other alumni.

Dawn Geronimo Terkla (1989) compared responses from Tufts University alumni with those from alumni of a group of peer institutions. She found that both groups agreed on which aspects of their college experience prepared them for activities undertaken later. These were "course work in major(s)/minor(s)," and "relationships with other students." As mentioned earlier, there was also agreement among alumni from different institutions about which abilities and skills are important to alumni and which ones were slighted during the undergraduates years. This prompted Terkla to conclude that, "This analysis seems to suggest that higher education institutions might want to consider ways in which oral communication skills, decision-making, and leadership training could be effectively integrated into the undergraduate curriculum."

Among the 24 colleges and universities using the modified COFHE instrument, Carleton College obtained one of the most complete sets of responses. Alumni from all seven clusters of classes were surveyed, and responses were received from 70%. In their paper on these responses, Brodigan and Rhode (1989) focused on changes over time in academic majors, hours worked during college, further education pursued, careers and career values, and civic activities. Their comparison of Carleton alumni career values with those of alumni from other institutions prompted them to consider how students who come to Carleton differ from those who go elsewhere. This linkage of alumni and freshmen profiles was later taken up in this author's comparison of advanced degrees pursued and careers undertaken by Georgetown alumni compared to other alumni. These comparisons underscored the concept of institutional identities. The analysis prompted the hypothesis that institutional identities are reproduced over time as much by the types of students attracted to the institution as by what happens at the individual college or university.

The sense with which an institution's alumni both reflect and help to define the institution's identity can be seen in the articles by Florence Skelly (1986) on the joint Harvard/Stanford survey and by Daniel Yankelovich (1988) on Brown University's more recent survey. The Brown survey was especially interesting, since it was motivated by a desire to determine the alumni satisfaction with the open curriculum adopted in 1969.

Standardized Alumni Surveys

At least three standardized alumni surveys are available. The first, available from the American College Testing Service (ACT), collects demographic data and information about further education, college experiences, sources of college financing, career planning, and placement. Provision is made for up to thirty additional, institution-specific questions. The National Center for Higher Education Management Systems (NCHEMS) and the College Board jointly offer both "recent" and "long-term" alumni questionnaires. Both ask alumni to identify goals realized while in college and those that have been, or are being realized since college. Alumni are then asked to indicate which are currently the three most important goals. Respondents are also questioned about their undergraduate majors, any further education being pursued, jobs held, and salary received. Space is provided for fifteen institution-specific questions.

The third standardized form is not, strictly speaking, an alumni survey but is, rather, a four-year follow-up to the freshman survey of the Higher Education Research Institute of the University of California, Los Angeles. The latest report on this follow-up, The American College Student, 1987 (Hurtado, Astin, Korn, and Dey, 1989), indicated that nationally 37% of the freshmen who

entered college in 1983 graduated in four years. There was, however, a wide variation by type and admission selectivity of institution. As a survey of four-year graduates, it has the advantage over the other standardized instruments in that it provides a longitudinal framework within which to view responses. Unfortunately, response rates to the survey have not been high (e.g., only 24% of the 16,095 freshmen enrolling in the fall of 1983 returned the follow-up questionnaire when it was mailed to them in the summer of 1987).

Another example of an effort to assess academic outcomes using longitudinal comparisons of freshmen and four-year graduates is an article by Daryl Smith (1990), "Women's Colleges and Coed Colleges: Is There a Difference for Women?" One drawback to all of the standardized forms is the "fit" between the questions asked and the particular institution, group of alumni, or hypotheses being investigated. The advantages (e.g., ease of use, pre-tested questions, comparative data) of the standardized forms have to be balanced against their disadvantages (e.g. lack of "fit" and, sometimes, cost).

Methodological Considerations

Several excellent articles and publications address methodological considerations in assessing academic outcomes using alumni surveys. Three of the most helpful resulted from surveys at community colleges. Their lessons are equally applicable to other colleges and universities. The first one that should be read is "Designing Follow-up Studies of Graduates and Former Students," (Stevenson, Walleri, and Japely, 1985). This describes lessons from a survey at Mt. Hood Community College, a medium-sized suburban comprehensive community college near Portland, Oregon. Among the questions considered were the following: Who is the "client" or group that wants the data? What are the issues to be studied? What possible practical outcomes could result from the survey? The more these are determined before instruments are selected or designed, the greater the likelihood that the results will be useful.

Another community college survey from the opposite end of the country, St. John's River Community College in Florida, (Williams, 1986) found that response rates to alumni or "program completer" surveys could be increased with brief questionnaires contained on prestamped postcards. An analysis of alternate mailing methods is based on a survey at Oakton Community College in Illinois (Smith and Bers, 1987). The report underscored the importance of follow-up in obtaining high response rates. This paper recommended a minimum of two follow-up efforts, the first a postcard reminder and the second a letter with another copy of the questionnaire. Armstrong and Lusk (1987) found that first-class postage can significantly increase response rates.

Surveys of teacher education program graduates (Clark and Nichols, 1983) revealed that stratified random samples with follow-up yield more precise estimates of outcomes than do one-shot mailings to entire alumni populations. A particularly good paper on uses of alumni outcomes research in academic planning has come from work at Ohio State University (Williford and Moden, 1989). A more complete review of methodological considerations can be found in the recent text, *By Design*, (Light, Singer and Willett, 1990). Other useful references are *Survey Research Methods* (Fowler, 1984) (particularly the sections on how large the sample should be, response rates, and nonresponse bias), and a paper on adjusting for nonresponse bias (Whipple and Muffo, 1982).

Suggestions for Conducting an Alumni Survey to Assess Educational Outcomes

Based on insights gained from the literature cited and the experience of coordinating an alumni survey of twenty-four colleges and universities designed to assess educational outcomes, the following suggestions are offered for those who wish to conduct similar studies:

1. Determine as precisely as you can the objectives for the survey. Who wants to know the answers to the questions sought? What aspects of the curriculum or student services might be affirmed or changed as a result of opinions gathered by the questionnaire? Usually answers to these questions will not be readily apparent at the beginning of the survey project. Normally a series of discussions will have to take place to set the stage for a meaningful survey project. Individuals who will be charged with using survey results should be involved as early as possible. Acceptance of the survey results will be greatly facilitated by "ownership" of the instrument and methodology used.

2. Depending on answers to the first questions, choose either a standardized instrument or develop one in collaboration with those who are supporting the survey and those who will be asked to act on its results. If a locally designed instrument is used, be sure to field-test a draft. Given the costs involved in credible surveys, only the most important questions and subdivisions of data should be included.

3. Select a sample of alumni whose responses will be seen as most meaningful, given the objectives of the survey. Think ahead to the tables of data that should be included in the analysis. How should the responses be divided? Cells with small numbers of responses are statistically suspect. What will be the likely response rate? While response rates of 70% or more are desirable, experience has shown that such rates are not easy to obtain in alumni surveys, even with proper follow-up. Besides follow-up by mail, consider using phone calls made as part of annual fund solicitations as a follow-up method. If phone calls to alumni in the sample are timed to be part of the follow-up effort, a thank you or reminder concerning the survey can be added after the solicitation has been concluded. In determining the size of the sample, the nature of the instrument (e.g., length, types of questions asked, apparent importance of the survey), follow-up methods to be used, and the historical involvement of alumni with their alma mater are all things to be considered.

4. When the sample is drawn, compare those sample characteristics that can be measured (e.g., male/female split, class years, groups of zip codes) with similar characteristics of the target population

universe. Be sure to include in the instrument measures of these characteristics. Before the sample is used, profiles of sample and universe should be compared to be sure that statistically significant differences do not exist. Later, profiles of respondents and the sample should also be examined.

5. Consider the level of confidentiality to be used in the survey. At a minimum, be sure to include in the initial cover letter an explanation of how responses will be used. If respondent identities are requested, include the request as an optional feature at the end of the questionnaire. Explain how the identities would be used. While such identities facilitate follow-up and provide linkages to other databases at the institution, they can also suppress the response rates, particularly if sensitive data is requested in the survey.

6. Estimate the costs involved, both out-of-pocket and time. Be sure to include costs of sufficient follow-up to achieve a response rate necessary to make the effort worthwhile.

7. Be sure to involve decision makers at the institution in the process of analysis and reporting. Plan a series of briefings to discuss results and to solicit questions for subsequent analysis of the data. Provide a range of reports from simple highlights to in-depth analysis. Look for occasions where survey results can be useful. It may be a year or more before circumstances on a campus provide opportunities to use the survey results in a meaningful way. Such occasions include accreditation self-studies and curricular reviews.

8. Finally, keep the survey project in perspective. Rarely will responses point to incontestable conclusions or specific directions for actions. Survey results are most effective when they prompt and inform discussions among decision makers, either by confirming or challenging previously held opinions or assessment results.

References

Note: Many of the entries below (reference prefix ED or EJ) were selected from a literature search conducted by the ERIC Clearinghouse on Higher Education, One Dupont Circle, Washington, D.C. 20036. Copies of documents can be obtained from the ERIC Document Reproduction Service (EDRS), 7420 Fullerton Road, Suite 110, Springfield, VA 22153-2852; telephone 703-440-1400 or 1-800-443-3742.

Armstrong, J.S. & Lusk, E.J. (1987). Return postage in mail surveys: A meta analysis. *Public Opinion Quarterly*, 51,233-248.

Bechtel, D.S. (1984). *Early career patterns of humanities college graduates: One institution's perspective of the "lean years," 1972-81.* Urbana-Champaign: University of Illinois, Career Development and Placement Center.

Brodigan, D.L. & Rhode, M.C. (1989, June). *Alumni careers and volunteer activities: Outcome measures at Carleton College.* Northfield, MN: Carleton College.

Clark, S.B. & Nichols, J.O. (1983, May). *Increasing the precision of estimates in follow-up surveys: A case study.* Paper presented at the Annual Forum of the Association for Institutional Research, Toronto, ON. (ERIC No. ED 232 569)

Coughlin, M.A. & Willemse, C. (1988, October). *Alumni research in practice: Assessment of the college and post-graduate experiences.* Paper presented at the 15th Annual Northeast Association for Institutional Research Conference, Providence, RI.

El-Khawas, E. (1989). *Campus Trends, 1989.* Washington, DC: American Council on Education.

Fowler, F.J., Jr. (1984). Survey research methods. *Applied Social Research Methods* (Vol. 1). Beverly Hills, CA: Sage Publications.

Hurtado, S., Astin, A., Korn, W. & Dey, E. (1989). *The American College Student, 1987.* Los Angeles: University of California-Los Angeles, Higher Education Research Institute.

Light, R.J. Singer, J.D. & Willett, J.B. (1990). *By design.* Cambridge, MA: Harvard University Press.

Litten, L. (1989, May). *Comparative data for alumni outcomes assessment: A twelve institution follow-up survey.* Paper presented at the Annual Forum of the Association for Institutional Research, Baltimore, MD.

McMillin, J.D., Armstrong, C.A., Allen, M.J. & Nyberg, K.L. (1989). *Behavioral sciences outcomes assessment project.* Bakersfield: California State University-Bakersfield, Applied Research Center.

Pace, C.R. (1972). *Education and evangelism.* New York: McGraw-Hill.

Pace, C.R. (1974). *The Demise of Diversity?* Berkeley, CA: Carnegie Commission on Higher Education.

Pace, C.R. (1979). *Measuring the outcomes of college.* San Francisco: Jossey-Bass.

Pettit, J. (1988a, September). *The 1988 alumni outcomes survey: A preliminary analysis of the classes of 1967 to 1969.* Paper presented at the Harvard University Assessment Seminar, Cambridge, MA.

Pettit, J. (1988b, October). Twenty-year memories and today's activities and values: Are they different for graduates of Jesuit, other religiously-affiliated and non-sectarian colleges? Paper presented at the Annual Meeting of the Conference of Liberal Arts Deans of the Association of Jesuit Colleges and Universities, New Orleans, LA.

Pettit, J. (1988c, November). *What can you do with your academic major?: A report on the careers of alumni by undergraduate major.* Washington, DC: Georgetown University.

Pettit, J. (1989, July). *A report card from Georgetown University undergraduate alumni.* Paper presented at the Society for College and University Planning Conference, Denver, CO.

Pigge, F.L. (1978). An approach to program/product evaluation in teacher education. Columbus: Ohio State Department of Education. (ERIC No. ED 260 060)

Pigge, F.L. (1983). *An appraisal of my preparation as a teacher at Bowling Green State University [and] A programmatic evaluative follow-up of a sample of the 1975-80 graduates of the basic programs.* Bowling Green, OH: Bowling Green State University. (ERIC No.ED 261 979)

Pigge, F.L. (1984, February). *Follow-up evaluation studies and procedures, Bowling Green State University.* Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education, San Antonio, TX. (ERIC No. ED 240 083)

Pigge, F.L. (1987). A follow-up of BGSU's teacher education graduates of 1980-85: Their on-the-job performance and their evaluation of elements of their teacher education programs (an eight-volume report presented to the teacher education faculty). Bowling Green, OH: Bowling Green State University. (ERIC No. ED 280 833)

Romney, L. (1979). *Measures of institutional goal achievement.* Boulder, CO: National Center for Higher Education Management Systems.

Schneider, G. et al. (1987). *Chapter 74 vocational education programs in Massachusetts: Results from a survey of 1983/84 graduates and their employers.* Quincy: Massachusetts State Department of Education, Bureau of Research, Planning, and Evaluation. (ERIC No. ED 281 003)

Sharp, L.M. & Weidman, J.C. (1986, September). *Early career patterns of undergraduate majors in the humanities.* Pittsburgh: University of Pittsburgh, School of Education, Department of Administrative and Policy Studies.

Skelly, F. (1986, March-April). The Stanford/Harvard survey. *Harvard Magazine, 88,*4. Cambridge, MA: Harvard University.

Smith, D. (1990, March-April). Women's colleges and coed colleges: Is there a difference for women? *Journal of Higher Education, 61,*2.

Smith, K. & Bers, T. (1987). Improving alumni survey response rates: An experiment and cost-benefit analysis. *Research in Higher Education, 27,*3,218-225. (ERIC No. EJ 370 569)

Solmon, L., Bisconti, A. & Ochsner, N. (1977). *College as a training ground for jobs.* New York: Praeger.

Spaeth, J.L. & Greeley, A. (1970). *Recent alumni in higher education.* New York: McGraw-Hill.

Stevenson, M., Walleri, R.D. & Japely, S.J. (1985). Designing follow-up studies of graduates and former students. In P.T. Ewell (Ed.), Assessing educational outcomes, *New Directions for Institutional Research* (No. 47). San Francisco: Jossey-Bass.

Terkla, D.G. (1989, July). *Alumni evaluation of undergraduate experiences.* Paper presented at the Society for College and University Planning Conference, Denver, CO.

Volkwein, J. F. (1989, February). *Albany graduates from five fields of study: A 1987 description and assessment of the graduate and undergraduate alumni in business, chemistry, English, history, & social welfare* (Assessment Report No. 8). Albany, NY: State University of New York at Albany.

Whipple, T.W. & Muffo, J.A. (1982, May). *Adjusting for nonresponse bias: The case of an alumni survey.* Paper presented at the Annual Forum of the Association for Institutional Research Forum, Denver, CO. (ERIC No. ED 220 040)

Williams, O. (1986). A follow-up evaluation project to establish an employer data base of the counties served by St. Johns River Community College: Final Report--October 1, 1985 to June 30, 1986). (ERIC No. ED 275 811)

Williford, A.M. & Moden, G.O. (1989, May). *Using alumni outcomes research in academic planning.* Paper presented at the Annual Forum of the Association for Institutional Research Forum, Baltimore, MD.

Wishart, P. & Rossmann, J. (1977). *Career patterns, employment and earnings of graduates of 11 ACM colleges* (final report to the Fund for the Improvement of Postsecondary Education). Chicago: The Associated Colleges of the Midwest.

Worth, R. (1989, May). *A report on the Harvard College classes of 1957, 1967, and 1977: Insights for educational policy.* Paper presented at Annual Forum of the Association for Institutional Research Forum, Baltimore, MD.

Yankelovich, D. (1988, February). A university in tune with the times: A survey of the "new curriculum" alumni finds that Brown lives up to its mission. *Brown University Monthly,* pp. 23-31.

Additional Bibliography

Adams, R.D. (1981, April). *Teacher education evaluation: The Western Kentucky University approach.* Address given before the faculty and staff of Glassboro State College, Glassboro, NJ. (ERIC No. ED 260 056)

Allen, D.L. (1985, April). Reliability of a survey of residency graduates in evaluating a behavioral science curriculum, *Journal of Medical Education, 60,*4,339-41. (ERIC No. EJ 317 077)

Ayers, J.B. (1984, 1985, 1986). *Study of the teacher preparation programs of Tennessee Technological University* (Reports No. 84-1, 85-2, 86-2). Cookeville, TN: Tennessee Techological University. (ERIC Nos. ED 275 635, ED 268 080, ED 252 517)

Bayless, O.L. & Moody, B.S. (1984, October). The speech communications methods course in secondary teacher preparation programs in Arkansas. *Journal of Communications Studies, 3,*1,20-24. (ERIC No. ED 254 876)

Beidler, P.G. (1985, January). What can you do with an English major? *College English, 47,*1,39-42. (ERIC No. EJ 311 486)

Benner, R.S. & Hitchcock, S.T. (1986). *Life after liberal arts.* Charlottesville, VA: University of Virginia, Career Planning and Placement Office.

Cassells, J.M. et al. (1986, March-April). Generic baccalaureate nursing student satisfaction regarding professional and personal development prior to graduation and one year post graduation. *Journal of Professional Nursing, 2,*2,114-127. (ERIC No. EJ 336 191)

Chizek, J.W. & Miller, W.W. (1984). *A follow-up and analysis of Iowa State University agricultural education curriculum graduates: 1964-81.* (ERIC No. ED 246 741)

Craig, R. & Freeman, D. (1986). *Survey of advanced degree graduates of Michigan State University: 1982-1985 academic years.* East Lansing: Michigan State University, College of Education. (ERIC No. ED 280 844)

Crook, J. et al. (1982, Summer). A question of timing: When is the best time to survey graduates to obtain feedback about an education program. *Assessment and Evaluation in Higher Education, 7,*2,152-158. (ERIC No. EJ 301 179)

Cushing, R.C. (1987, October). *The integration of a post-graduation activities survey.* Unpublished paper. Ithaca, NY: Cornell University, Planning and Analysis.

Davis, C.K. et al. (1984). *Employment survey of 1982 graduates of Ontario University: Report of major findings.* Toronto: Ontario Ministry of Colleges and Universities. (ERIC No. ED 248 770)

Denton, J.J. et al. (1985). *Perceptions of former students on degree of emphasis to place on pedagogical topics.* College Station: Texas A & M University, Instructional Lab. (ERIC No. ED 261 997)

Duvall, C.R. et al. (1985). *Follow-up study of Indiana University at South Bend graduates: Undergraduate and graduate degree programs, 1970-83.* South Bend: Indiana University, Division of Education. (ERIC No. ED 258 531)

Eversoll, D.B. (1986, Spring). Institutional planning with successful participants: A 'listening ear' for adult baccalaureate degree graduates. *Journal of Continuing Higher Education, 34,2,24-26.* (ERIC No. EJ 336 198)

Engels, D.W. & Wilborn, B.L. (1984, March). Surveying graduate students and graduates of counselor education programs: Instruments, rationale, and genesis. *Counselor Education and Supervision, 23,3,234-243.* (ERIC No. EJ 301 179)

Ewell, P.T. (1983). *Student outcomes questionnaires: An implementation handbook.* Boulder, CO: National Center for Higher Education Management Systems.

Firenze, L. (1983, Spring-Summer). Alumni from one external degree program: Profile, perceptions, and preference. *Alternative Higher Education, 7,2,71-79.* (ERIC No. EJ 298 321)

Fotiu, R. et al. (1986). Undergraduate follow-up study: Spring, 1985. *Research and Evaluation in Teacher Education: Program Evaluation Series* (No. 11). East Lansing: Michigan State University, College of Education. (ERIC No. ED 280 842)

Freeman, D. & Loadman, W. E. (1985). Recommendation for doctoral guidance committees suggested by follow-up studies at two universities. *Research and Evaluation in Teacher Education: Program Evaluation Series* (No. 7). East Lansing: Michigan State University, College of Education. (ERIC No. ED 280 840)

Gailmard, N.B. et al. (1984, Fall). Practice characteristics of recent Illinois College of Optometry graduates. *Journal of Optometric Education, 10,2,26-29.* (ERIC No. EJ 308 582)

Giencke-Holl, L. et al. (1985). *Evaluating college outcomes through alumnae studies: Measuring post-college learning and abilities.* Milwaukee, WI: Alverno Productions. (ERIC No. ED 261 626)

Gillespie, K. & Folks, W.R., Jr. (1985, February). Foreign language and international business: The MIBS Program after ten years. *Foreign Language Annuals, 18,1,47-52.* (ERIC No. EJ 313 912)

Gunzburger, L.K. et al (May, 1984). Effect of three-year and four-year curricula on physicians' attitudes and medical practice. *Journal of Medical Education, 59,5,363-379.* (ERIC No. EJ 301 542)

Gusler, T.E. (1982, October). *A survey of recent alumni: Design and processing considerations.* Paper presented at the Annual Conference of the Southern Association for Institutional Research, Birmingham, AL. (ERIC No. ED 225 492)

Heilberger, M.H. (1986, Summer). The alumni survey: A tool in curriculum evaluation. *Journal of Optometric Education, 12,16-19.* (ERIC No. EJ 340 207)

Khoury, R.M. (1981). *The class of 1975: A retrospective look at the mission of IUPUI at Columbus* (a report to Indiana University-Purdue University at Indianapolis, Columbus). (ERIC No. ED 238 318)

Kirk, E.L. (1982). *Follow-up studies of teacher education program graduates* (based on reports to the National Council for the Accreditation of Teacher Education). (ERIC No. 221 544)

Kraetzer, M.C. et al. (1984, October). *Design and implementation of a multi-strategy, collegewide program of evaluation and planning: The Mercy College self-study project.* Paper presented at the Annual Meeting of the Evaluation Research Society/The Evaluation Network, San Francisco. (ERIC No. ED 263 834)

Leape, M.P. (1987). *Report on Ph.D. recipients 1986-87.* Cambridge, MA: Harvard University, Faculty of Arts and Sciences, Office of Career Services.

LeMaster, D. (1983, Summer). The employment of Ph.D.'s in English: 1981-82. *ADE Bulletin, 75,16-17.* (ERIC No. EJ 283 787)

Lewis, J. & Nelson, K. (1983, Summer). The relationship between college grades and three factors of adult achievement. *Educational and Psychological Measurement, 43,2,577-80.* (ERIC No. EJ 287 636)

Lindsay, M. (1985, March-April). Procedures for follow-up studies of teacher education graduates. *Journal of Teacher Education, 36,2,29-33.* (ERIC No. EJ 319221)

Luckner, J.L. & Sileo, T.W. (1984, Fall-Winter). A comparative study of off-campus master of arts degree programs in learning disabilities and emotional disturbance. *Innovative Higher Education, 9,1,42-47.* (ERIC No. EJ 318 541)

Lujan, H.A. et al. (1985). *An elementary principal program for American Indian trainees--final report.* Las Cruces: New Mexico State University, Bureau of Educational Research. (ERIC No. ED 265 001)

Maryland State Board for Higher Education. (1984). *Follow-up survey of the 1981 bachelor's degree recipients from Maryland public institutions.* Annapolis, MD: Author. (ERIC No. ED 240 960)

McClain, C.J. & Kruger, D.W. (1985). Using outcomes assessment: A case study in institutional change. In P.T. Ewell (Ed.), Assessing educational outcomes. *New Directions for Institutional Research* (No. 47). San Francisco: Jossey-Bass.

McCullagh, J.G. & Maypole, D. E. (1983). *Career status of baccalaureate social work graduates: An appraisal of a professional program.* Cedar Falls, IA: University of Northern Iowa, Department of Social Work. (ERIC No. ED 227 760)

Melchiori, G.S. (Ed.). (1988). Alumni Research: Methods and Applications. *New Directions for Institutional Research* (No. 60). San Francisco: Jossey-Bass.

Mentkowski, M. et al. (1983). *Careering after college: Perspectives on lifelong learning and career development* (Research Report No. 8; final report). Milwaukee, WI: Alverno College. (ERIC No. ED 239 564)

Miller, W.W. (1983). *Comparing and contrasting master of agriculture and master of science alumni.* Texas A & M University. (ERIC No. ED 230 136)

Mitchell, W.D. & Thompson, T.L. (1985, May). Attitudes of internists in practice toward their ambulatory care education. *Journal of Medical Education, 60*,5,415-416. (ERIC No. EJ 318 565)

Newton, M. (1982). *Educational significance of a university undergraduate, non-traditional, external degree program.* Unpublished doctoral dissertation, University of Redlands, California. (ERIC No. ED 221 085)

Nohe, L.M. (1987, May-June). Seeking answers from alumni: Allentown College of St. Francis de Sales. *Liberal Education, 73*,3,28-29. (ERIC No. EJ 355 766)

Oregon State System of Higher Education (1985). *Profile of 1983-84 graduates of Oregon schools and colleges of education one year after graduation.* Eugene, OR: Author. (ERIC No. ED 283 809)

Pierson, M.J. & Springer, S.B. (1988, February). Can anything good come from non-traditional degree programs? *Lifelong-Learning, 11*,5,20-24. (ERIC No. EJ 365 599)

Reichley, R.A. (1985, July-August). Father Greeley's gem. *Currents, 11*,7,11-12. (ERIC No. EJ 323 931)

Rossmann, J.E. & El-Khawas, E. (1987). *Thinking about assessment: Perspectives for presidents and chief academic officers.* Washington, DC: American Council on Education.

Rush, G.S. (1983). *Follow-up of teacher education graduates, 1983.* Hattiesburg: University of Southern Mississippi, College of Education and Psychology. (ERIC No. ED 260 062)

Sagaria, M.A.D. et al. (1985). *Studying the impact of college on students: Project development and recommendations for conducting research* (an Action Research Project for Ohio Dominican College). Columbus: Ohio State University. (ERIC No. ED 264 813)

Sellberg, R. (1988, January). Two-year master's degree programs and salaries of new library school graduates. *Journal in Academic Librarianship, 13*,6,336-339. (ERIC No. EJ 363 876)

Stark, J.S. et al. (1985, November). Comparative career accomplishments of two decades of women and men doctoral graduates in education. *Research in Higher Education,22*,3,219-249. (ERIC No. EJ 324 051)

Stark, J.S. et al. (1982). *Recipients of masters degrees in education at the University of Michigan: A career follow-up study.* Ann Arbor: University of Michigan. (ERIC No. ED 253 500)

Stolworthy, R.L. (1984a). *Washburn University: Evaluation of graduate programs, 1983-84.* Topeka, KS: Washburn University. (ERIC No. ED 262 013)

Stolworthy, R.L. (1984b). Teacher education undergraduate program evaluation of first year teachers, 1983-84. Topeka, KS: Washburn University. (ERIC No. ED 262 010)

Stolworthy, R.L. (1986). *Evaluation of master of education graduate degree programs.* Topeka, KS: Washburn University. (ERIC No. ED 265 152)

Thomae-Forgues, M. et al. (1984, September). Curriculum evaluation, education financing, and career plans of the 1983 medical school graduates. *Journal of Medical Education, 59*,9,691-698. (ERIC No. EJ 305 582)

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